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THE DETECTION AND DETERMINATION OF SULPHUROUS ACID IN LIME JUICE.

By Edwin Dowzard.

Some time ago the writer had occasion to examine a number of samples of lime juice for sulphurous acid, free or combined. On applying the official qualitative and quantitative tests, the presence of SO_2 was indicated. The tests are as follows:

OFFICIAL AND PROVISIONAL METHODS OF ANALYSIS, BULLETIN NO. 107 (REVISED), 1908, PAGE 187.

(a) Qualitative Detection of SO_2.—"To about 25 grammes of the sample (with the addition of water if necessary), placed in a 200 c.c. Erlenmeyer flask, add some sulphur-free zinc and several cubic centimetres of hydrochloric acid. In the presence of sulphites hydrogen sulphide will be generated and may be tested for with lead paper. Traces of metallic sulphides are occasionally present in vegetables, and the above test will indicate sulphites. Hence positive results obtained by this method should be verified by the distillation method."

(b) Determination of Total SO_2 Distillation Method.—"Distil 100 grammes (adding water if necessary) in a current of carbon dioxide after the addition of about 5 c.c. of a 20 per cent. solution of glacial phosphoric acid until 50 c.c. have passed over. Collect the distillate in n/10 iodine solution in a flask closed with a stopper perforated with two holes, through one of which the end of the condenser passes and through the other a U-tube containing a portion of the standardized iodine solution. Twenty-five c.c. of

n/10 iodine may be employed, diluted with water to give the desired volume. The method and apparatus may be simplified without material loss in accuracy by omitting the current of CO_2, adding 10 c.c. of phosphoric acid instead of 5 c.c., and dropping into the distilling flask a piece of sodium bicarbonate, weighing not more than one gramme, immediately before attaching to the condenser. The carbon dioxide liberated is not sufficient to expel the air entirely from the apparatus, but will prevent oxidation to a large extent. The U-tube trap may also be omitted if the end of the condenser tube is made to extend below the surface of the iodine solution, and the distillation conducted with a steady flame. When the distillation is finished, wash the contents of the U-tube into the flask, and determine the excess of iodine with standard thiosulphate solution. One c.c. n/10 iodine is equivalent to 0.0032 Gm. SO_2."

In the qualitative test using 25 c.c. of filtered lime juice, the lead paper was stained a dark brown. A blank test proved the absence of sulphur in the reagents.

In the quantitative test two determinations on different samples gave the following results:

Amount of lime juice taken	C.c. n/10 iodine consumed	Equivalent to grammes SO_2
No. 1, 100 c.c.	6.7 c.c.	0.0214 Gm.
No. 2, 100 c.c.	7.1 c.c.	0.0227 Gm.

These results, both qualitative and quantitative, would seem to indicate the presence of SO_2; but the samples in question were guaranteed free from SO_2, and a more detailed examination proved that the official quantitative method is misleading in the case of lime juice.

A number of limes were obtained and the juice expressed by means of an ordinary lemon press. After filtering the juice, the official qualitative method was applied with the result that the lead paper was stained a dark brown about equal in tint to that obtained from the juice in question. Whether the sulphur in lime juice is present as a sulphide or easily reducible organic compound has not been determined. The point is that a very marked tint is produced on the lead paper when lime juice is tested by the official process.

In this connection it may be of interest to note that lemon juice also acts in a similar though not so pronounced a manner.

On applying the quantitative method to the freshly expressed

juice, 0.008 per cent. SO_2 was apparently found. The juice was, however, quite free from any added SO_2.

Lime juice holds in solution a small quantity of essential oil which passes over on distillation and combines with part of the iodine, which accounts for the results obtained. The samples of juice in question evidently contained more oil in solution than the juice expressed by the writer. This is explained by the fact that on the large scale a greater pressure is used and more oil expressed than is the case when an ordinary lemon press is used. The following experiments prove that this is the case. The juice was tested before and after extraction with chloroform.

100 c.c. LIME JUICE TAKEN

	No. 1	No. 2	No. 3 (juice expressed by the writer)
C.c. $\frac{n}{10}$ iodine consumed before extraction with chloroform	6.7 c.c. = 0.0214 % SO_2	7.1 c.c. = 0.0227 % SO_2	2.5 c.c. = 0.008 % SO_2
C.c. $\frac{n}{10}$ iodine consumed after extraction with chloroform	1.0 c.c. = 0.0032 % SO_2	1.76 c.c. = 0.0056 % SO_2	0.0 c.c.

The above results show that the small quantity of essential oil held in solution is sufficient to render the official method useless in the case of lime juice.

After a number of experiments the following qualitative and quantitative methods were worked out and proved to be reliable.

QUALITATIVE METHOD FOR THE DETECTION OF SO_2 IN LIME JUICE.

One hundred c.c. of lime juice is acidified with 5 c.c. of 20 per cent. phosphoric acid, and 50 c.c. distilled into 25 c.c. of a 1 per cent. solution of sodium bicarbonate contained in a Fresenius or other absorption flask; the latter is attached to the end of the condenser by a perforated cork. The distillate is placed in a 200 c.c. Erlenmeyer flask, a few pieces of zinc and 8 c.c. of hydrochloric acid added. A plug of cotton wool is inserted in the neck of the flask and the mouth of the latter capped with lead acetate paper. After thirty minutes the paper is removed and examined; if any SO_2 is present, the latter will be stained a dark brown or black.

On testing the sample in question by the above method, the lead paper remained unaffected. Sulphurous acid (in the form of

sodium sulphite) was then added to the juice in the proportion of 1 part in 100,000. This quantity of SO_2 stained the lead paper brown.

The above test will detect less than 1 part of SO_2 in 100,000, but the latter figure may be taken as the practical limit.

QUANTITATIVE METHOD FOR THE DETERMINATION OF SO_2 IN LIME JUICE.

Distil 100 c.c. of juice in a current of CO_2 after the addition of about 5 c.c. of 20 per cent. solution of glacial phosphoric acid until 75 c.c. have passed over. The distillate is received in a Fresenius absorption flask containing 25 c.c. of a 1 per cent. solution of sodium bicarbonate. The flask is attached to the condenser by means of a perforated rubber stopper. The outlet of the flask is connected with a U-tube containing 10 c.c. of the bicarbonate solution.

When the distillation is finished, the liquid in the flask and U-tube is transferred to a separator and shaken out twice with chloroform, using 10 c.c. each time. After the chloroform has been separated, 25 c.c. of n/10 iodine solution is added and the excess of iodine titrated with n/10 thiosulphate. Each c.c. n/10 iodine is equal to 0.0032 Gm. SO_2.

The distillate is shaken with chloroform to remove the traces of essential oil, which would otherwise combine with the iodine as previously stated.

The above method gives fairly good results as will be seen from the following figures:

100 C.C. LIME JUICE TAKEN.

	No. 1	No. 2
SO_2 present	0.036 Gm.	0.036 Gm.
SO_2 found	0.034 Gm.	0.032 Gm.

If more than 0.05 per cent. SO_2 is present, 50 c.c. or less of the sample should be used.

ANALYTICAL DEPARTMENT.
Parke, Davis & Company.

PROBLEMS FOR THE PHARMACOPŒIAL CONVENTION OF 1910.

By M. I. Wilbert, Washington, D.C.

The coming United States Pharmacopœial Revision Convention has been a fruitful subject for discussion at many, if not all of the annual meetings of medical and pharmaceutical associations, and not a few of the problems that must be considered by the delegates taking part in that convention are now being seriously discussed by physicians and pharmacists in all parts of this country.

While it is generally admitted that the Pharmacopœia of the United States is, and for several decades has been, the "peer" among national pharmacopœias, there is nevertheless much truth in the opening sentence of the report of the A.Ph.A. Committee on the U.S.P. which asserts that: "The masterpiece of to-day becomes to-morrow but the imperfect model for a higher ideal."

So much has been said and written on this subject that it would be futile for me to attempt to say anything original, and I will, therefore, content myself with calling your attention to what others, more able and better informed than I, have had to say on the matter of pharmacopœial revision, including the scope of the Pharmacopœia and the intent of the originators of that book; for after all is said the intent of the originators should be respected, granting of course that their intent was proper and their ideal designed to further the public good.

It is safe to say that no American pharmacopœia up to the present time has been so much or so thoroughly criticized as the now official U.S.P. VIII, and perhaps no one will gainsay the statement that the most severe arraignment to which this pharmacopœia has been subjected is reflected in the publication of "New and Non-official Remedies" by the American Medical Association and the "Additions and Corrections, U.S. Pharmacopœia (8th Rev.) May 1, 1907 (et al.)" published with the approval of the committee less than two years after the publication of the U.S.P. VIII itself.

The first of these publications has been very widely interpreted as an indication that the U.S.P. VIII does not fully meet the needs and wants of medical practitioners and the second, embodying as it does a total of 431 changes, many of them important and all of

them significant, can surely not be interpreted other than as indicating that the U.S.P. VIII when put to a crucial test failed to meet the requirements as a legal standard for the articles described in its pages.

To the critical observer it must be at once apparent that these two really vital deficiencies in the present Pharmacopœia of the United States involve practically all of the problems that will present themselves for solution by the Pharmacopœial Revision Convention that will meet in the City of Washington, in May, 1910, for it goes without saying that unless these fundamental shortcomings can be corrected and their recurrence avoided the Pharmacopœia fails in the very mission for which it was designed: to serve as a book of standards for the medicaments used by physicians in the cure and prevention of disease.

I must admit that I am one of the few, or many, to believe that practically all of the important pharmacopœial problems can be satisfactorily solved by requiring that a representative committee of physicians, dentists, and veterinarians decide on the admissions to the Pharmacopœia and that the Committee of Revision, consisting of pharmacologists, pharmaceutical-chemists, pharmacognosists, and pharmacists, be instructed to give full and complete publicity to all of their conclusions before finally deciding on the text of the Pharmacopœia as it is to appear.

It will of course be said that in the past physicians have had much if not all of the say as to what is to go into the Pharmacopœia, and for answer I will point out that not since the compilation of the original Pharmacopœia of the United States has any concerted attempt been made to learn what the really active and responsible men in the medical profession desire to have incorporated in the Pharmacopœia and what medicaments actually represent the contemporaneous stage of development in the therapeutic art.

One hundred and one years have passed into the eternity of yesterday since the first American Pharmacopœia was published in the City of Boston by the Massachusetts Medical Society. The authors of this early Pharmacopœia were men of erudition, were leaders in their profession, and were possessed of that intuitive sense of responsibility that prompted them to consider the public welfare rather than popular practices as the basis for admission of an article to the Pharmacopœia. They assert that: "It is the intention of a Pharmacopœia to point out those articles whose properties entitle

them to be employed for the cure of diseases, with the best modes of preparing them."

The first Pharmacopœia of the United States, as you will remember, was a composite of the drafts presented by the several district conventions, and the members of the committee whose duty it was to prepare this material for the press appear to have been imbued by the same high ideals as to what a Pharmacopœia should be, for they say in the preface to the Pharmacopœia that: "It is the object of a Pharmacopœia to select from among substances which possess medicinal power those the utility of which is most fully established and best understood, and to form from them preparations and compositions in which their powers may be exerted to the greatest advantage."

That the several committees of revision appointed after 1830 did not hold strictly to this original definition of what a Pharmacopœia should be is evidenced by the remarks made by Dr. Charles Rice less than a decade ago when, in discussing Pharmacopœial problems, he asserts that the Pharmacopœia has ceased to be a work of reference to the physician because it does not contain the information which the physician requires regarding the nature, properties, and doses of some of the most important remedies he uses.

Dr. Sollmann, in a recent article on the revision of the Pharmacopœia of the United States, asserts that present conditions constitute a vicious circle in that: "Physicians take no interest in pharmacopœial revision because the Pharmacopœia does not represent their vital interest; and the Pharmacopœia does not represent their interest because they take no interest in its revision."

The real cause for this present-day lack of interest on the part of medical practitioners is well evidenced by the prevailing standards for admission to the Pharmacopœia as given in an article by Dr. H. C. Wood, President of the United States Pharmacopœial Convention, in which he says: "A common fallacious belief is that pharmacopœial recognition means that the drug recognized is of value; the fact is that the United States and other Pharmacopœias have in them numerous drugs of very little use. . . . If five thousand doctors in the United States (approximately 3 per cent. of the licensed practitioners) believed brick dust to be a valuable remedy and habitually used it, brick dust would have to go into the Pharmacopœia."

The difference between these present-day standards and those

adopted by the originators of our Pharmacopœia is rather strongly emphasized by the following paragraph from the preface to the first U.S.P.: "The value of a Pharmacopœia depends upon the fidelity with which it conforms to the best state of medical knowledge of the day. Its usefulness depends upon the sanction it receives from the medical community and the extent to which it governs the language and the practice of those for whose use it was intended."

To elaborate on the reasons for this evident decline in the standards for admission to our Pharmacopœia would take us too far afield in the history of the evolution of the U.S.P. I would like, however, to call your attention to an article by the then editor of the *Pharmaceutische Runschau,* published in 1890, which contains a history of the Pharmacopœia of the United States and clearly outlines the relations existing between the development of the Pharmacopœia of the United States and the reasons for the origin and continuance of the United States Dispensatory. The resulting more or less complete dependence of the Pharmacopœia on the publishers of the Dispensatory continued uninterruptedly, without as much as being questioned, from 1833 to 1875 when Dr. E. R. Squibb first suggested the desirability of developing the Pharmacopœia of the United States as an independent publication, thus reverting back to the ideas of the originators of the book as outlined by Drs. Jackson and Warren in the preface to the Pharmacopœia of the Massachusetts Medical Society and later endorsed in the preface of the Pharmacopœia of the United States itself.

It appears, however, that Dr. Squibb was at least three decades in advance of his contemporaries both medical and pharmaceutical. The American Medical Association, as organized at that time, was not prepared to take up the work for the medical profession and the members of the American Pharmaceutical Association were not sufficiently far sighted to insist that the medical practitioners of the country assume their share of the duties and responsibilities attendant on the making of a really representative Pharmacopœia and so the year 1880 witnessed what has been characterized as the capture of the Pharmacopœia by pharmacists, though in fact it was nothing more than a manifestation of willingness on the part of pharmacists to do their share of the work and to undertake the actual drudgery in connection with the duties that more properly should have been assumed by regularly delegated members of the medical profession.

In discussing pharmacopœial problems just one decade since

the late Dr. Charles Rice pointed out that the all-important problem that presented itself to the revisers of the Pharmacopœia in the previous decade was that of emancipating the Pharmacopœia from the control of the publishing trade. This accomplishment with the evolution of the U.S.P. from a mediocre jumble of materia medica catalogue and pharmaceutical formulary is and ever will be recognized as the life work of a true nobleman in pharmacy, one of those really great men that are ever willing to sacrifice themselves and to contribute their best work gratuitously for the advancement of a righteous cause.

Dr. Charles Rice was re-elected Chairman of the Committee of Revision in 1900, and his death early the following year, followed as it was by a necessary reorganization of the Committee of Revision, contributed greatly no doubt to the undue delay in the publication of the U.S.P. VIII and the inclusion of many of the more or less minor imperfections which were found to exist in the Pharmacopœia after its adoption as a legal standard under the provisions of the Food and Drugs Act, June 30, 1906.

As pointed out in the opening paragraphs of this communication, the adoption of the Pharmacopœia as a legal standard was in turn the direct cause for the re-revision of the U.S.P. VIII, thus disclosing the second fundamental defect in our present method of revising the Pharmacopœia. It has repeatedly been pointed out that the present Committee of Revision is both too large and too small. It is too large for rapid or even prompt work and it is hopelessly inadequate in point of numbers and specific information when definite decisions on special questions are involved. Even the Pharmacopœial Convention, with all its possibilities for representation, cannot expect to have more than a minor portion of the interests that are involved in a revision of the Pharmacopœia actually represented by delegates able to take part in the proceedings. Even granting that this were possible, however, the resulting convention would be hopelessly unwieldy and could never be brought into line to properly consider all of the many questions arising in connection with the work in hand. Even under present conditions it is recognized to be practically impossible to accomplish much in the way of progress unless the delegates to the convention will agree to inform themselves more thoroughly before attending the convention on the needs and the shortcomings of the Pharmacopœia so as to be able to safeguard the interests of the public without doing an injustice to

any one of the many special interests that are necessarily involved.

In time we will no doubt recognize the far sightedness of the originators of the Pharmacopœia and readopt their proposed system of district or State conventions at which the several questions can be thoroughly discussed and a limited number of delegates instructed to attend and intelligently take part in a national convention at which all possible interests will be properly represented. This is, however, for the future. In the meantime many if not all of the shortcomings of the present Pharmacopœia can be avoided in the next if the coming convention will agree upon a plan of revision somewhat along the lines delineated by Dr. Sollmann (*J. Am. M. Assoc.*, 1908, v. 51, p. 2013 and *Ibid.*, 1909, v. 53, p. 1543) and essentially similar to that followed in some of the Continental countries, Switzerland for instance. This plan would involve restricting the Committee of Revision to a comparatively small board of editors, or an executive committee, consisting of the responsible Chairmen of the several subcommittees or departments, who are empowered to select their own assistants but are required to submit all of their decisions for public discussion before final adoption or publication in the Pharmacopœia.

That the desirability of full and free publicity in connection with the proceedings of the Committee of Revision has been frequently discussed is of course well known to all of you; that the present Committee of Revision has been liberally criticized for its evident secretiveness is also a well known fact, but it is probably not so well known that even after the final publication of the Pharmacopœia the present committee has failed to give the same degree of publicity to the proceedings that was given to the proceedings in former decades, so that even now, nearly a decade after the election of the committee and on the very eve of the Pharmacopœial Convention, it is not definitely known abroad who is to be blamed or credited in connection with the shortcomings and the advances manifested in the U.S.P. VIII.

From my point of view this is clearly unjust to the members of the Revision Committee, for if any one member has done less than his share of the work or has delayed progress in any way, it should be known and the re-election of that particular member avoided. If, on the other hand, any one member of the committee has done more than another it should also be known to the delegates, before they attend the convention, so that the suggestions that

may be offered by such a member may be given proper consideration and he receive the credit that is rightfully due him.

The Pharmacopœia has ever been an important weapon for the combating of quackery and the protection of the public health and now that its content has the added support of law it is more than ever necessary to raise its standard and to safeguard its content from even the suspicion of being dominated by self-interests.

The Pharmacopœia is public property, it rightfully belongs to the whole people, for it is designed for their protection and welfare and is not as some would have us believe simply a matter of convenience for the benefit of physicians and pharmacists.

For these various reasons the evidences of re-awakening on the part of the better element in the medical profession to a sense of responsibility in connection with the Pharmacopœia is to be welcomed, for it surely presages better conditions in pharmacopœial matters in the near future.

A recent contribution to the *Journal of the American Medical Association* points out that if the Pharmacopœia is to command the respect and admiration of medical practitioners it must be made to reflect the best and only the best in American medicine so that it may serve as a guide for the physician and a safeguard for his patients.

When the Pharmacopœia of the United States has been developed to that degree that it is recognized as containing all that is good and is purged of all that has been demonstrated to be useless or harmful, then and not until then will it be accepted without question by medical men, then and not until then will it become a real necessity to pharmacists, and then and not until then will its provisions and tests be gladly accepted as standards by all who are interested in standards for medicaments used in the cure as well as the prevention of disease, and then will the Pharmacopœia be, as it really should be, a mighty bulwark for the protection of the public health.

PHARMACOPŒIAL REVISION PROBLEMS.

By Joseph P. Remington.

The article written and read by Mr. Wilbert at the Pharmaceutical Meeting of the Philadelphia College of Pharmacy, while interesting, contains some views and statements which, in the opinion of the writer, call for a reply.

In the second paragraph of the article the author states that: "The Pharmacopœia of the United States is, and for several decades has been the 'peer' among national pharmacopœias." It is also stated that: "The most severe arraignment to which this Pharmacopœia has been subjected is reflected in the publication of 'New and Nonofficial Remedies' by the American Medical Association and the 'Additions and Corrections, U. S. Pharmacopœia (8th Rev.), May 1, 1907 (et al),' published with the approval of the committee less than two years after the publication of the U.S.P. VIII itself."

In answer to this the writer would say that the American Medical Association has done yeoman service through its Council of Pharmacy and Chemistry in publishing from time to time lists of modern remedies which are used by physicians to-day, and in sifting out those which are really valuable and condemning such as are, in their opinion, unworthy of serious consideration. The Council have undoubtedly made some mistakes and in this respect they are like the criticized Committee of Revision. It is impossible for any individual or committee to avoid the common fault of humanity.

Mr. Wilbert has not, in my opinion, fully stated the case as far as the "Additions and Corrections" issued by the Committee of Revision is concerned. In reference to these "Additions and Corrections" he says: "The first of these publications has been, very widely, interpreted as an indication that the U.S.P. VIII does not fully meet the needs and wants of medical practitioners, and the second, embodying as it does a total of 431 changes, many of them important and all of them significant, can surely not be interpreted other than indicating that the U.S.P. VIII when put to a crucial test failed to meet the requirements as a legal standard for the articles described in its pages."

The Chairman of the Committee of Revision explained in detail

in a paper entitled "The Recent Changes in the United States Pharmacopœia" (see Proceedings of the American Pharmaceutical Association, 1907, p. 58) and this paper was widely published in the pharmaceutical journals. The analysis of these "Additions and Corrections" showed that of the total number (431) 157 changes were duplications and reduplications made necessary through the adoption of one change in one part of the book which compelled a similar correction in other parts of the book, thus: when it was shown that cochineal was better than hæmatoxylin as an indicator it was necessary to strike out hæmatoxylin and insert cochineal 33 times and 27 changes were necessary because of the change in the standards for belladonna and other alkaloidal drugs, because these drugs were to be found in the tables in the book and also in the preparations, so changes had to be made in the preparations made from these drugs; 83 changes were made because the tests were more rigid than necessary and some would lead to an unnecessary and great increase in cost. A number of changes had to be made because one was dependent upon the other, change in specific gravity requiring a change in the boiling point or melting point and so on. In 692 pages only 10 typographical, editorial, or proof-reader errors were found and these were corrected after the first two thousand Pharmacopœias were issued and there were about forty thousand corrected copies issued since that time.

In addition to this the published "Additions and Corrections" was really a *supplement* which the Convention authorized the committee to prepare and send out. Now to expect any pharmacopœia containing nearly one thousand separate articles to be entirely satisfactory and require no revision or change when subjected to the criticisms of *an army* of users of the book, the majority of whom had never before seriously considered the Pharmacopœia from a commercial standpoint, does not indicate lack of ability or care on the part of the Revision Committee. On the other hand, a fair, unbiased judgment and consideration of all of the facts would be that the Committee of Revision had produced an excellent book, and as Mr. Wilbert says in another part of his communication, it is the "peer" of any national pharmacopœia.

The writer cannot agree with the statement that there are only two really vital deficiencies in the present mode of revising the Pharmacopœia and that the two depend upon the "New and Unofficial Remedies" published by the American Medical Association and the

"Additions and Corrections" issued by the Committee of Revision.

There are a number of changes which should be made in the method of revising the Pharmacopœia. Of far more importance is the method of conducting the revision solely or almost solely by correspondence through the mails. There should be at least financial means provided for holding meetings in which the members can come together at least three or four times in a year to discuss the important subjects which have to be adjudicated. With a committee of twenty-six scattered all over the country in order to satisfy geographical considerations it may not surprise many to know that travelling and hotel expenses for this large committee mean an expenditure of over $1000 per meeting. The present Committee of Revision was compelled to take advantage of the annual gatherings of the American Pharmaceutical Association to hold such meetings as were held, in order to save expenses.

Now that the next Pharmacopœia will be a legal book of standards some provision will have to be made to supply the necessary funds, and either through reducing the number on the Revision Committee to one-half the present number or through some other plan even more satisfactory can the method be improved.

This, also, has a bearing upon the much talked of *cry for publicity*. If, as some writers demand, complete publicity is given of all of the acts of the Committee and Board, then necessarily will there be such an expenditure of time before reaching a decision that one revision cannot be completed before another one will be required.

On the other hand, it is possible that important changes recommended by subcommittees could be sent to pharmaceutical and medical journals before final publication of the book which would give, within reasonable limits, information which would prevent any great errors from creeping into the book; but to expect the whole text of the Pharmacopœia, in all its detail, to be published in advance, is impracticable when one thinks of the time given for the consideration of all objections from critics throughout the country (critics do not agree among themselves) and far worse conditions would obtain than exist at present. There would have to be a "time limit test" here, but even then, who is to regulate the indefinite time when the last man sends in his last criticisms? If publicity of this sort is demanded and a criticism should not be accepted by the other critics nor by the Committee of Revision or its subcommittees, who is to decide or guess which of the two views is going to be

satisfactory? for a decision *must be made,* as the article or test cannot be dropped. It is evident that the subject of publicity must be settled by the Pharmacopœial Convention, but the writer agrees with Mr. Wilbert and others that it is expedient and wise to fully discuss this subject and undoubtedly a proper solution of the question will be reached.

The writer does not believe that harking back to the Pharmacopœia of 1820 or previous Pharmacopœias will be of much practical value. There has never been a Committee of Revision in the past which had to deal with the peculiar conditions which exist at present. Previous Pharmacopœias have never been absolute legal standards but have been subject to adoption through consent, except where the various States or the United States Custom authorities have chosen to adopt Pharmacopœia standards, and the Committee of Revision for the next Pharmacopœia will work under vastly different conditions than the present committee.

A different method of financing the work will be necessary. There never has been, in any revision, any method for compelling a member of the committee to work if he did not wish to, in fact it has been a veritable " labor of love." No member could be expected to drop his usual work from which he derived the ways and means of supporting himself or his family and hence pharmacopœial work has been conducted by earnest, able, and conscientious men at great sacrifice, and the wonder is that a book has been produced which critics even admit is the " peer " of any Pharmacopœia in the world and which Schelenz, an accepted author, declares to be " the aristocrat of all Pharmacopœias."

With regard to the increase of medical influence upon the next Pharmacopœia the writer has frequently expressed the opinion that the medical profession should be the sole arbiters in the matter of selecting the medicines which should be added to a Pharmacopœia as well as those which should be deleted and there seems to be at present a strong desire among those who take an interest in pharmacopœial revision to take up this part of the work but *tempora mutanter et nos mutamur in illis.*

The present Pharmacopœia is a book of standards and by far the largest part of the work has properly been given to the tests required to establish the identity and purity of the various substances used directly or indirectly in the treatment of diseases.

The Food and Drugs Act has revealed a condition in this country

which shows an amount of adulteration and sophistication which is extensive and wide-spread, and hence the march to development and progress points clearly to the necessity of obtaining chemists of the highest attainments in chemical analysis to revise these tests. Pharmacognosists of the highest rank must be secured for the same reasons to provide descriptions and tests which will exclude drugs of poor quality or substitutions.

Last and by no means least, pharmacy must be represented to provide men of equal calibre who can furnish processes and formulas for the preparations. Again, the importers of crude drugs, the manufacturers of chemicals and preparations, and these of the highest reputation, who are trusted to import and make the highest class of medicines, should be represented, not only because their knowledge and experience is needed, but because the cheerful acceptance of the standards of the Pharmacopœia can only be secured by their co-operation.

The whole subject of pharmacopœial revision has widened and developed in all directions and we are about entering upon a new era. It will not, in the writer's opinion, be a question of supremacy of this, that, or the other interests which will make the next revision a greater success than the present one, but the best results will come from harmonious co-operation of all of the interests and it only remains to devise practical and successful means of meeting such difficulties as may arise.

SPIGELIA, BELLADONNÆ FOLIA, PRUNUS VIRGINIANA, AND FRANGULA WITH SOME OF THEIR COMMON ADULTERANTS.

By John Moser, Jr., P.D.

SPIGELIA.

Spigelia has been the subject of numerous papers and many investigations have been made in an effort to establish the identity and source of its adulterants. Notwithstanding the many accurate descriptions that have been published, both of the growing plant and the crude drug, and the effort made to induce collectors to at least attempt to obtain the true article, spigelia continues to be

the worst adulterated and most often substituted of any crude drug on the American market.

Investigators seem to have concluded that the rhizome and roots of *Ruellia ciliosa* constitute the principal adulterant. My experience in the analysis of several samples leads me to believe that this is not the case at the present time.

In 1906 the U. S. Department of Agriculture issued Bureau of Plant Industry Bulletin No. 100, Part V, by W. W. Stockberger. In this paper it is asserted that ruellia is the principal adulterant of "The drug known as pinkroot," while mention is made of the roots of *Hydrastis canadensis, Aristolochia serpentaria, Saponaria officinalis, Dioscorea villosa,* and *Collinsonia canadensis* as impurities due in main either to the carelessness of collectors or lack of familiarity with the plant on the part of young or inexperienced collectors. Data are also given to prove that ruellia has been wrongly regarded as *Phlox carolina.* Two excellent illustrations of the over-ground portions of spigelia and ruellia accompany the article.

The AMERICAN JOURNAL OF PHARMACY, vol. 78, No. 12, contains a very excellent article on the same subject, by Theo. Holm, Ph.D., in which the microscopic structure of ruellia and phlox is discussed at length. A number of accurate illustrations accompany the article.

Dr. Kraemer, in his "Botany and Pharmacognosy," 3rd ed., presents the most comprehensive data obtainable concerning the microscopic structure of spigelia, as well as that of ruellia.

I have recently examined nine samples of so-called pinkroot, one of which was a broker's sample and eight of which came directly from the collectors and from widely different sections of the country. In all cases I have drawn my conclusions from the microscopic structure, as well as from the macroscopic appearance. Two samples proved to be of genuine spigelia and of fair quality. One sample consisted entirely of ruellia, which is easily determined by making a longitudinal section of a root and noting the cystoliths and stone cells in the cortex. The addition of dilute acid to the slide caused a profuse liberation of CO_2 from the cystoliths.

Five of the samples consisted entirely of a root of the following description: rhizome horizontal or slightly oblique, dark brown to blackish externally, annulate, somewhat branched, 2 to 5 cm. long, 1 to 3 mm. thick; fracture short, wood usually decayed; upper

surface commonly bearing 1 to 5 stem remnants which are round, 1.5 to 3 mm. thick, 2 to 5 cm. long; fracture short; pith decayed. Roots arising from all parts of the rhizome; dark brown, .5 to 1 mm. in diameter, 5 to 15 cm. long, somewhat wrinkled longitudinally, and finely branched; fracture tough; wood brownish; odor and taste slight. A cross section of the root shows the presence of numerous root hairs 150 to 250 μ long, a cortex of about 12 layers of parenchyma cells, which are free from starch, stone cells, cystoliths, and crystals; pericambium continuous; tracheæ numerous.

This corresponds closely to the available data on phlox. On the whole, it bears a rather close resemblance to spigelia, and like spigelia its matted roots are apt to contain much dirt.

The remaining sample consisted of about equal parts of the above root and a coarse root which bore no resemblance to it.

None of the "minor adulterants" mentioned by Stockberger was found except a single root of serpentaria.

These results indicate that while ruellia is frequently met with as an adulterant of spigelia it is by no means the principal adulterant, and that while ruellia was early mistaken for phlox, that species of phlox, probably both *P. ovata* and *P. glaberrima,* are at the present time frequently collected and sold as spigelia.

BELLADONNÆ FOLIA.

The leaves of *Scopolia carniolica* are largely used as an adulterant of belladonna leaves. They resemble the latter rather closely, but are readily detected if any of the fruit is present, this being the most characteristic feature.

The fruit of belladonna is a 2-locular, many-seeded berry, with a deeply 5-cleft, persistent calyx. Scopola fruit is a 2-locular pyxis about 1 cm. in diameter; calyx light green, thin, and papery; united to near the apex where it is slightly notched, thus almost completely covering the pyxis. On removing the cap the pyxis is seen to be 2-locular, with a thickened dissepiment, bearing a number of seeds which are light brown, somewhat reniform, 2 to 2.5 mm. long, and deeply pitted.

The stem of belladonna is hollow, cylindrical, flattened, longitudinally wrinkled, and breaks with a short-fibrous fracture. That of scopola is triangular or quadrangular, woody and solid, and breaks with a short and somewhat resinous fracture.

The shape of the full-grown leaves also differs, those of belladonna being broadly ovate or somewhat elliptical with an acuminate apex and acute base. Scopola leaves are mostly obovate, with an acuminate apex and a base which is narrowed into the petiole. The shape of the young leaves varies considerably.

A cross section through the midrib quickly reveals the identity of the leaf, the characteristic feature being the presence of numerous glandular and nonglandular hairs in the case of belladonna and the absence of these, or the occasional presence of a peculiar glandular hair in scopola leaves.

The alkaloidal content may or may not be abnormally high in a sample of belladonna leaves adulterated with scopola leaves.

PRUNUS VIRGINIANA.

While it is generally believed that wild cherry bark is seldom or never adulterated, it appears that collectors frequently mistake *Prunus virginiana* L., or choke-cherry, for *Prunus serotina* Ehrh., or wild black cherry, which is the official source of wild cherry bark.

Prunus serotina Ehrh. is a large tree with leaves which are oblong or lanceolate-oblong, taper pointed and serrate, with incurved, short, and callous teeth. The fruit is purplish black and has a slightly bitter but pleasantly vinous taste.

Prunus virginiana L. is a tall shrub with oval or obovate, abruptly pointed, sharply and deeply serrate leaves. The fruit is red in color and has a very astringent taste.

Both grow abundantly throughout the eastern and central United States.

Choke-cherry bark is in strips of various lengths, 1 to 4 cm. wide and .5 to 2 mm. thick; outer surface brownish green, with numerous large lenticels, .5 to 1.5 cm. long; inner surface reddish brown, finely striate; fracture fibrous; inner color white; odor of bitter almond when moistened; taste bitter and astringent. The cross section shows numerous bast fibres, parenchyma containing spherical starch grains 2 to 3 μ in diameter, tannin masses which are colored brownish by ferric chloride and calcium oxalate in rosette aggregate crystals 20 to 30 μ in diameter. The powder is lighter in color than that from wild cherry bark and is distinguished by its numerous bast fibres which are 1.5 to 2.5 mm. long, 12 to 20 μ in diameter, lignified and have a thin lumen.

FRANGULA.

Frangula frequently has admixed with it or substituted for it the bark of *Rhamnus carniolica.* Five samples were examined. One consisted entirely of *Rhamnus carniolica,* one was frangula of U.S.P. quality, and three were mixtures of frangula and *Rhamnus carniolica.*

The bark of *Rhamnus carniolica* is usually thicker than frangula, being 1 to 3 mm. thick; the external surface is grayish or grayish brown, usually somewhat wrinkled longitudinally; and with numerous lenticels 1 to 2 mm. long, rather obscure; the inner surface is grayish to dark brown, longitudinally striate from the bast fibres near the surface; the fracture is short-fibrous, the bast fibres frequently projecting .5 to 1 cm. from the inner bark; the inner surface is reddened by alkalies as in frangula; the odor is slight, and the taste bitter and astringent.

The cross section shows numerous groups of bast fibres occasionally surrounded by crystal fibres with small monoclinic crystals; the medullary rays are 4 to 7 cells wide and there are numerous rosette aggregates of crystals of calcium oxalate, 15 to 25 μ in diameter in the parenchyma.

In frangula the bark is thinner, darker brown, with more numerous, prominent, and larger lenticels; the inner surface is more finely striate, there are fewer bast fibres, and the medullary rays are only 2 cells wide; the taste is only slightly bitter.

NEW YORK, November 4, 1909.

REPORTS ON THE TWELFTH INTERNATIONAL CONGRESS ON ALCOHOLISM, AND THE SIXTEENTH INTERNATIONAL MEDICAL CONGRESS.*

BY REID HUNT, M.D.,

Chief of the Division of Pharmacology, Hygienic Laboratory, United States Public Health and Marine Hospital Service.

In accordance with bureau letter of July 3, 1909, detailing me to attend the Twelfth International Congress on Alcoholism to be held in London, July 18–24, 1909, and the Sixteenth International Med-

* From Public Health Reports, XXIV, No. 41, pp. 1487–1489.

ical Congress to be held in Budapest, Hungary, August 29 to September 4, 1909, I have the honor to make the following report:

TWELFTH INTERNATIONAL CONGRESS ON ALCOHOLISM

I arrived in London July 18, the day on which the congress was officially opened. The sessions of July 19 were devoted to general meetings, the opening of the exhibitions, and registration. On the succeeding days there were both general meetings and special scientific sessions continuing throughout the day and usually also the evening. A great variety of subjects was discussed at these meetings. Thus in the scientific sessions the effect of alcohol upon immunity, heredity, muscular and mental energy, its relation to tuberculosis, insanity, and nervous diseases, and its use in the treatment of pneumonia and enteric fever were discussed in a conservative and scientific manner. The consensus of opinion of the speakers seemed to be that alcohol, in any form, is but seldom of distinct value in the treatment of disease and some evidence was brought forward to show that alcohol even in moderate amounts has an unfavorable effect upon offspring and has a tendency to lower resistance to infection. The dangers of alcohol to those with any tendency to nervous or mental diseases was especially emphasized by Dr. F. W. Mott, and the effects upon children by Professor Clouston. The statements frequently made that alcohol is, per se, a predisposing factor to tuberculosis received some but not marked support from an elaborate statistical study by Henschen of Sweden. The statement that alcohol in very moderate amounts has a markedly injurious action upon certain mental processes was not confirmed in a series of very careful experiments by Professor Rivers of Cambridge.

Figures were shown illustrating how marked has been the decrease of the use of alcohol in the hospitals of various countries. In connection with the discussion of the medicinal use of alcohol I presented a paper prepared by Mr. Wilbert on the alcoholic beverages in the different pharmacopœias and on the use of wine in the preparation of drugs. I called attention to the fact that only the United States and Greek pharmacopœias include whiskey and suggested that its recognition by these pharmacopœias gave it an undue prominence as a medicinal agent; also that wine is very undesirable as a pharmaceutical agent, and that the preparations made with it should be discarded from the pharmacopœia. The paper was well received by the medical members of the congress.

A very great variety of subjects was discussed at the general meetings. Among the speakers were a number of members of Parliament, prominent lawyers (including the lord chief justice), railway officials, officers of the navy and army (including the surgeon-general), teachers, clergymen, and others. Much attention was given to temperance teaching in the public schools, the relation of temperance to life insurance, the treatment of the inebriate, and the economic and legal aspects of the alcohol problem. One of the most important of the general meetings was devoted to "Alcohol and the Efficiency of the National Services," at which representatives of the naval, military, postal, railway, and legal professions spoke. The extraordinary growth of total abstinence in the British army and navy was especially emphasized; 40 per cent. of the army in India are total abstainers. This growth of total abstinence in the army was attributed by the surgeon-general to a very considerable degree to the improvements that have been made in the surroundings of the soldier, such as improved housing and food. One speaker pointed out the need of giving much more attention to the physical welfare of the sailors of the merchant marine. The unhygienic conditions under which many of them live were held to be the chief cause of their intemperance and the deterioration caused by these two factors (intemperance and lack of hygiene) was called a national danger.

An extensive exhibition was held in connection with the congress. This consisted largely of charts, books, etc., used in the temperance instruction in schools of different countries. An important feature of the exhibit was a series of posters prepared by the boards of health of various cities of England on the relation between alcoholism and disease. These posters consisted largely of brief quotations from the parliamentary commission on physical deterioration and are displayed in railway and other public places.

There were about 1400 members of the congress and practically all of the civilized countries were officially represented. The congress was held under the auspices of the British Government, which had representatives from each of the leading departments. The congress adjourned to meet at The Hague in 1911.

En route from London to Budapest I visited the offices of the ministry of agriculture of Belgium, under the auspices of which the articles of agreement concerning the unification of potent medicaments in different pharmacopœias were prepared; these articles were signed by the leading countries. This work of bring-

ing about greater uniformity in the different pharmacopœias is being continued by the establishment of an international commission (secretariat), which is to be a means of communication between the committees engaged in pharmacopœial revision. Eight of the leading countries have already agreed to contribute to the support of this commission. The United States Government, not controlling the United States Pharmacopœia, has not agreed to contribute, but I was informed that the United States Pharmacopœial Convention would be entitled to full participation if it would assist and that it would be formally invited to do so. It is believed that the organization of the commission will be completed within a few months and that there will be a meeting of the members at Brussels next year in connection with the decennial international congress on pharmacy.

SIXTEENTH INTERNATIONAL MEDICAL CONGRESS

I arrived at Budapest August 27, and August 28 attended the meeting of the committee of the international union for the protection of child life.

The Sixteenth International Medical Congress was formally opened August 29, when addresses of welcome and responses from delegates of various governments were delivered. There were no other general meetings except the concluding one and five lectures on general interest.

The work of the congress was done in twenty-one sections. I registered in the section of pharmacology and therapeutics, which had nine meetings. Nearly a hundred papers, all strictly technical, were read before this section. I presented two papers: one prepared with Doctor Seidell on pharmacopœial preparations of the thyroid gland, and one with Mr. Taveau on the pharmacological action of a number of choline derivatives.

A discussion of special interest to the division of pharmacology was one on the new Hungarian Pharmacopœia, the first copy of which was shown at the meeting. There were also interesting discussions on the claims made for certain proprietary medicines. The papers presented covered nearly every phase of pharmacology and therapeutics and in nearly every case were based upon the experiments or observations of the readers; among the latter were many of the leading authorities on their subjects in the world.

The congress adjourned September 4; the next meeting will be in London.

PROGRESS IN PHARMACY.

By M. I. Wilbert, Washington, D.C.

A QUARTERLY REVIEW OF SOME OF THE MORE INTERESTING LITERATURE RELATING TO PHARMACY AND MATERIA MEDICA.

The Pharmacopœia of the United States and the coming Pharmacopœia Revision Convention are attracting the attention of physicians as well as pharmacists, and an unbiased observer must admit that physicians are devoting rather more serious thought to pharmacopœial problems than are pharmacists.

This fact was emphasized at a recent meeting of the City of Washington Branch of the American Pharmacopœial Association, where it was shown that while the very comprehensive report of the A. Ph. A. Committee on the U.S.P. was not even read, the reports of similar committees of the A.M.A. were read and discussed at some length.

The several reports of special committees on the Pharmacopœia of the United States of America that were presented at the section meetings of the American Medical Association were published in the *Journal of the American Medical Association* (September 4, 1909, pp. 791–796), and were further commented on in the same journal (October 30, 1909, pp. 1491 and 1496).

Another article bearing on the same subject appears in the *Journal of the A.M.A.* for November 6, 1909 (pp. 1543–1546), and is well worth careful study on the part of pharmacists.

That our English cousins are more wide-awake to what is going on in this country than many of our own pharmaceutical editors is evidenced by an editorial in the *Pharmaceutical Journal* (London, Sept. 18, 1909, pp. 359–360), which discusses the report of the Committee on the U.S.P. of the Section on Practice of the A.M.A.

The attention given to pharmacopœial matters at the meeting of the N.W.D.A. is also worth bringing to the attention of members of the drug trade generally, and the report of the Committee on Drug-standards of that association is well worth studying. The same is true of the report of the A.Ph.A. Committee on the U.S.P., which is printed in full in the *Bulletin of the American Pharmaceutical Association* for November.

The report of the A.Ph.A. Committee on the National Formu-

lary, which is printed in full in the October *Bulletin of the American Pharmaceutical Association,* is also of vital interest to pharmacists and every active member of the profession should appoint himself a committee of one to review and comment on this report.

The New Hungarian Pharmacopœia (Ph. Hung. III) was exhibited before Section V of the 16th International Medical Congress, held at Budapest, and attracted considerable attention. The new book becomes official on January 1, 1910, by which time it must be in possession of every apothecary, physician, and veterinarian in the Kingdom of Hungary. The book is said to be modern in every respect and to compare well with other pharmacopœias that have been published during recent years.

Dutch Pharmacopœia.—A number of proposed additions to and corrections of the requirements now included in the Netherlands Pharmacopœia are presented in the *Pharmaceutisch Weekblad.* Among the proposed new additions are acidum acetylo-salicylicum with aspirinum as a synonym, acidum diethyl barbituricum with veronalum as a synonym, diethylamido-antipyrinum, pyramidonum and hexamethylenum tetraminum with urotropinum as a synonym.—*Pharm. Weekblad,* 1909, 46, pp. 969–989.

International Standards for Drugs.—The International Congress for the Repression of Fraud which met in the City of Paris, October 17 to 24, discussed a rather lengthy program devoted to the possible development of international standards for drugs and chemicals. While the program has much to commend it, it is questionable indeed if the time is opportune for so ambitious a venture. The proceedings are reported at some length in the *Chemist and Druggist* (London, 1909, Oct. 30, pp. 681–683).

Section XI of the International Congress for Applied Chemistry submitted a series of resolutions bearing on patents and trade-marks which, if put into force, would eliminate the present-day discrimination and have the effect of instituting more equitable provisions for international patent and trade-mark legislation. This proposition is to be discussed at greater length by the congress to meet, in 1912, in this country.

The Scope of Preventive Medicine.—Dr. J. H. White, in the Chairman's address before the Section on Preventive Medicine and Public Health of the American Medical Association, points out that without the incessant labor of public health advocates such cities as New York, London, and Paris could not exist, and that every

aggregation of people known as a city would be a focus of endemic diseases. He also points out the need for constant supervision of children, their hygiene, food, and clothing, and the development of a body not undermined in health by the mistaken notion that children must have measles, whooping-cough, and the other diseases of childhood.—*Jour. Amer. M. Assoc.*, 1909, v. 53, p. 665.

Medical Education.—The educational number of the *Journal of the American Medical Association* (Aug. 14, 1909) contains much that should be of interest to the pharmacist. Among the items of more direct importance is a list of the medical colleges of the United States, their location, requirements, and equipment. A list of the foreign medical colleges, an enumeration of the medical standards abroad, the American Medical Association standards of medical education, the need, method, and value of medical college inspection, the influence of the Carnegie foundation on medical education, the crowded medical curriculum and the present status of State Board requirements are also discussed. From an educational point of view, this number of the *Journal of the American Medical Association* is interesting from cover to cover and there are many suggestions that might be applied with advantage to pharmaceutical education. The feature in connection with medical education that appears to have been of the greatest importance is the systematic inspection of medical colleges, and rating the institution in accordance with the report of the inspector rather than by the claims made in the annual announcement.

Vacation Course in Pharmacy.—A note in the *Pharmaceutisch Weekblad* for August 2, announces a vacation course on the use of the microscope in pharmacy by Dr. F. A. Stiensma at the University of Utrecht, and adds that prospective students are expected to bring their own microscopes.

The Jubilee Number of the Chemist and Druggist, published July 31, 1909, in commemoration of the 50th year of the publication of that journal, is an unusually interesting collection of material, in addition to a complete report of the proceedings of the British Pharmaceutical Conference. This number contains rather a comprehensive, illustrated history of the *Chemist and Druggist,* and this necessarily includes much of the history of British pharmacy. As a jubilee souvenir, a replica of the first number of the *Chemist and Druggist* is included.

Analysis of Secret Remedies is the title of an 800 page pamphlet

reprinted from the *British Medical Journal,* giving the cost and composition of many of the more widely used proprietary remedies. A rather interesting complication is the fact that a number of British daily and weekly journals have refused to recognize the book in any way, and have even declined advertisements of the book.

Revealed Secrets.—Under this heading an editorial in the *Pharmaceutical Journal* (Aug. 21, 1909) discusses the compilation of analyses of nostrums that have been referred to above, as reprinted from the *British Medical Journal,* and points out that the book can be obtained from the office of the British Medical Association, Strand, London, price 1s.

Secret Remedies.—In Great Britain the Home Secretary announced in the House of Commons that a select committee would be appointed to inquire into the composition of secret remedies and the claims made for them by advertisements.—*Pharm. J.,* Lond., 1909, v. 29, p. 388.

The Valuation of Galenical Preparations.—Dieterich and Mix present a compilation of the tests presented by the German Pharmacopœia for the several galenical preparations included in its pages. They also suggest additional tests that should be included so as to facilitate the valuation of preparations and the detection of adulteration or sophistication.—*Pharm. Zentralh.,* 1909, v. 50, pp. 726–734.

Aconite Assay.—Frank O. Taylor, in a comprehensive monograph, discusses the quantitative valuation of aconite and points out that chemical valuation is of doubtful utility and at best uncertain, and that the Squibb test is more rapid, reliable, and accurate than any other method so far proposed for the standardization of the root and its preparations.—*Jour. Ind. and Eng. Chem.,* 1909, v. 1, pp. 549–567.

Assay of Opium.—C. E. Carlson discusses the assay of opium for morphine, and points out the desirability of developing an assay method that would be universally acceptable. For such a general method he recommends a modification of Dieterich's method as used in the Ph. Svec. VIII.—*Pharm. Zentralh.,* 1909, v. 50, pp. 721–725.

Assay of Drugs.—An interesting possibility in the assay of drugs is outlined by Elias Elvove, in Bulletin No. 54, of the Hygienic Laboratory, which records the fixing power of alkaloids in volatile acids and its application to the estimation of alkaloids with the aid of phenolphthalein or by the Volhard method.

Glycerin in Fluidextracts.—R. Firbas reports an investigation on the part played by glycerin in the extraction of various drugs, and concludes that, for the fluidextracts of cinchona and kola, glycerin appears to be necessary, for hydrastis desirable and for ergot not needed.—*Pharm. Ztg.*, 1909, v. 54, p. 765.

Cultivation of Medicinal Plants.—W. Mitlacher discusses the possibility of introducing the cultivation of medicinal plants in connection with the pharmacognostic courses at the different universities. He points out that for the pharmacist located in rural sections a practical knowledge of drug cultivation would be of advantage. He might develop drug culture as a side line or utilize his knowledge to guide others in its practical application.—*Pharm. Ztg.*, Berl., 1909, v. 54, p. 767.

Ferments of Drugs.—An abstract calls attention to the probable action of ferments on the glucosidal bodies in drugs during drying and storing, and the possibility of destroying the ferment by preliminary heating.—*Chem. and Drug.*, Lond., 1909, v. 75, p. 638.

Adrenalin and Adrenalin-like Bodies.—W. H. Schultz reports a number of quantitative pharmacological studies to determine the effect on blood-pressure, the toxicity and the measurement of mydriasis in the frog's excised bulbus. He quotes an extensive bibliography and concludes that the blood-pressure method with dogs, under morphine-ether anæsthesia, the vagi cut, and very small doses of curare, is the most accurate pharmacological assay for catechol derivatives.—*Bull. No.* 55, Hygienic Laboratory, U.S.P.H. & M.H.S.

Agar-agar.—G. Weigel reviews the uses of agar-agar for various technical purposes and points out that its use in pharmacy and medicine appears to be decidedly on the increase. In addition to its widespread use in connection with suppositories and pastilles, and as a bacteriological culture medium, it is also being used as a non-irritating laxative agent because of its property of absorbing and holding moisture. In Germany, a variety of preparations containing agar-agar as the basis are being sold.—*Pharm. Centralh.*, 1909, v. 50, p. 766.

Anusol Suppositories.—Puckner and Warren report the examination of a sample of anusol suppositories which showed that they contain about 0.08 per cent. of iodine, or 1.2 per cent. of the amount claimed; 0.71 per cent. of bismuth, or .19 per cent. of the amount claimed, and zinc the equivalent of 16.5 per cent. of zinc oxide, or

about 100 per cent. of the amount claimed. The results are reported as clearly showing that the claims made concerning the composition of anusol suppositories are not substantiated by the facts.—*J. Am. M. Assoc.*, 1909, v. 53, p. 1112.

Astrolin is a colorless powder having a faint odor and an agreeable acid and slightly bitter taste. It melts at from 64° to 65.5° C., and at 20° C., is soluble in 0.6 parts of water and in 0.5 parts of absolute alcohol, 1 part of benzol and 0.7 parts of chloroform. It is given in doses of from 0.5 to 1.0 Gm. and is now being introduced in Germany as a substitute for migrainin mixtures containing antipyrine and caffeine, which, because of their dangerous properties, are not allowed to be sold promiscuously.—*Pharm. Zentralh.*, 1909, v. 50, pp. 702–704.

Benzosalin.—Benzoyl-salicylic-acid methylester, or methyl-benzoyl-salicylate is the methylester of benzoyl-salicylic-acid. It occurs as fine white crystals with a very faint aromatic odor. It dissolves readily in chloroform, and in 35 parts of 90 per cent. alcohol. Benzosalin is said to be useful in rheumatic affections in doses of from 0.5 to 1.0 Gm. three or four times a day.—*J. Am. M. Assoc.*, 1909, v. 53, p. 868.

Bile Salts.—Long and Johnson report a study of the commercial bile salts and point out that at least some of the available preparations do not have the composition that is claimed for them and practically all are more or less variable mixtures of the several constituents of bile.—*J. Am. M. Assoc.*, 1909, v. 53, pp. 1412–1413.

Brandy.—The members of the Royal Commission on Whiskey and other Potable Spirits are reported as thinking that the evidence is strongly in favor of regarding brandy as a spirit derived from no other material than the grape, but they are also of the opinion that the compounded spirit long recognized by the name of "British Brandy" is entitled still to be so named and sold.—*Pharm. Jour.*, Lond., 1909, v. 29, p. 232.

The influence of caffeine and other drugs on the toxicity of acetanilid and antipyrine is discussed by Worth Hale, in *Bulletin No.* 53, Hygienic Laboratory, U. S. Public Health and Marine-Hospital Service. The history of the custom of combining caffeine with the several coal-tar antipyretics is reviewed and a large amount of experimental work is recorded.

Hale finds that caffeine has little or no influence on the deleterious influences of acetanilid or antipyrine on the heart. Sodium

bicarbonate appears to lessen the poisonous effects of acetanilid upon the heart.

Cannabinol.—Max Czerkis reports on experiments made to determine the composition of cannabinol. The oxidation as well as the reduction products of cannabinol are substances mostly resinous, not crystalline, and not readily purified. Cannabinol $C_2H_{30}O_2$ contains a hydroxyl group. An acetyl group can be added and on careful nitration a trinitrocannabinol can be produced.—*Pharm. Ztg.*, 1909, v. 54, p. 767.

Metabolized Cod-liver Oil.—The Council on Pharmacy and Chemistry has authorized the publication of a report from the Chemical Laboratory of the American Medical Association which indicates that Waterbury's metabolized cod-liver oil neither contains nor represents any appreciable amount of cod-liver oil, and that the advertising matter that has been published in regard to it is misleading and therefore fraudulent. The results of the chemical examination are given in detail.—*J. Am. Med. Assoc.*, 1909, v. 53, pp. 1201–1202.

The U. S. District Attorney, acting upon the recommendation of the Secretary of Agriculture, seized thirty-six cases of " Metabolized Cod-liver Oil Compound " in Washington, D.C., on October 4, on the ground that it was misbranded in violation of the Food and Drugs Act of June 30, 1906.—*South. Pharm. Jour.*, 1909, v. 2, p. 158.

Chloral monomenthol and chloral dimenthol, according to the *Journal de Pharmacie d'Anvers* are definite combinations obtained by simply melting together, on a water-bath, the required amounts of chloral and menthol.—*Pharm. Ztg.*, Berl., 1909, v. 54, p. 569.

Digalen.—This is said to be " soluble amorphous digitoxin " in a mixture of distilled water and alcohol. The average single dose, 1 c.c., is said to contain 0.003 Gm. of digitoxinum soluble Cloetta.—*J. Am. Med. Assoc.*, 1909, v. 53, p. 869.

Ergothioneine.—C. Tanret has isolated a new alkaloid from ergot to which he has given the name ergothioneine. This alkaloid is soluble in 8.6 parts of water at 20° C., very soluble in hot water, and only sparingly soluble in strong alcohol.—*J. de Pharm. et de Chim.*, 1909, v. 30, p. 145.

Glycerin.—O. T. Joslin discusses the comparative cost of glycerin produced by the Twitchell process and that recovered from waste soap lye, and points out that the former process because of its economy and general adaptability is destined to replace the older methods.—*Jour. Ind. and Eng. Chem.*, 1909, v. 1, p. 54.

Iodone is described as a periodide of phthalic acid anhydride prepared by treating a solution of phthalic anhydride in acetic ether with a solution of iodine and potassium iodide and crystallizing the product from suitable solvents. Iodone occurs in the form of dark green prismatic crystals which melt at 163° C. When freshly prepared it is odorless, but on standing traces of iodine are liberated, giving it a faint odor of iodine. Water decomposes iodone into iodine, potassium iodide, and phthalic acid.—*Journ. Am. M. Assoc.*, 1909, v. 53, p. 633.

Isopral (*Berl. klin. Wchschr.*, 1909, No. 31).—Wassermeyer publishes favorable observations on the use of isopral, which he believes to be particularly useful in various forms of colic and cramps, and in cases of mania. A harmful effect of isopral on the heart could not be noted.—*Pharm. Ztg.*, 1909, v. 54, p. 663.

Milk in Powder Form.—Lewis C. Merrell discusses the drying of milk and points out a number of economic reasons for the marketing of milk in powder form, and asserts that most of these reasons might be summed up in one phrase, "A world market for milk." An even more important reason for favoring this form of milk is a sanitary one, as with milk in powder form it will be possible to create a high standard of quality and purity because the stability of the product will permit of the enforcement of rigid regulations.—*Jour. Ind. and Eng. Chem.*, 1909, v. 1, p. 540.

Passiflora Incarnata.—The editorial note calls attention to the rather curious combination of pharmacologic action that is claimed for May pop (*Passiflora incarnata*) in the advertising literature sent out by the maker of "Daniel's concentrated tincture" of this drug. It is reported as being useful in convulsions and in paralysis. —*Jour. Am. M. Assoc.*, 1909, v. 53, p. 1204.

Pergenol is a mixture of molecular quantities of sodium perborate and sodium bitartrate that liberates hydrogen dioxide and boric acid on dissolving in water. Pergenol occurs as a crystalline powder having a slightly acid reaction and is said to be quite stable if kept dry.—*Pharm. Ztg.*, 1909, v. 54, p. 294.

Potassium dichromate is proposed as a general standard for titrimetric solutions by F. V. Bruchhauser, who asserts that this salt is always available in chemically pure form, is comparatively stable, and can readily be freed from even traces of water.—*Pharm. Ztg.*, 1909, v. 54, p. 810.

Sodium Benzoate in Ketchups and other Food Materials.—William E. Hillyer outlines a method for determining sodium

benzoate in ketchups or other food materials which depends on the washing out of an acidified aliquot part of a solution of the water soluble constituents with ether, dissolving the ether residue in absolute alcohol, neutralizing with alcoholic solution of sodium hydrate, evaporating, dissolving in saturated alcoholic solution of silver benzoate, precipitating with silver nitrate, washing, drying, and weighing.—*Jour. Ind. and Eng. Chem.*, 1909, v. 1, p. 538.

Tannismuth (bitannate of bismuth) is a light yellow powder with slightly astringent taste, insoluble in water, soluble in cold caustic alkalies and in diluted hydrochloric acid. It is said to be useful in chronic catarrh given in doses of 0.3 to 0.6 Gm.—*J. Am. M. Assoc.*, 1909, v. 53, p. 868.

Thephorin.—Theobromine sodium formate is a double salt of sodium formate and theobromine sodium. It occurs as a white, odorless powder, having a saline, bitter taste and is readily soluble in water, producing an alkaline solution. It is directed to be given in doses of 0.5 Gm. (7½ grains) two or three times a day, and is said to be useful in cardiac affections, nephritis, dropsy, etc.—*Jour. Am. M. Assoc.*, 1909, v. 53, p. 868.

Whiskey.—The Royal Commission on Whiskey and other Potable Spirits has issued its final report and concludes that whiskey, as a commercial product, is regarded both by the manufacturers and by the public as a spirit made from no other materials than malt and unmalted grain. Maize is considered as being perfectly wholesome and a whiskey made from it is not to be excluded. Scotch whiskey is made in Scotland and Irish whiskey is distilled in Ireland, and from all appearances whiskey is just what it was before the Royal Commission began its investigation.—*Pharm. Jour.*, Lond., 1909, v. 29, p. 231.

Veronal.—An inquest on the body of Mrs. Adriana Wyborn, wife of Dr. Arthur Wyborn, brought out the fact that, contrary to the advice of the doctor, his wife had secured a bottle of veronal tablets and had taken a dose of the same with fatal results. Dr. Wyborn declared it was a wicked thing that such tablets could be purchased as they had been.—*Pharm. J.*, Lond., 1909, Aug. 21, v. 29, p. 279.

Elimination of Veronal.—Fischer and Hoppe have endeavored to demonstrate a reason for the many cases of poisoning following the use of veronal, have studied the elimination of this drug, and conclude that actively functionating kidneys are essentially necessary for the proper elimination of veronal.—*Pharm. Ztg.*, Berl., 1909, v. 54, p. 587.

PHILADELPHIA COLLEGE OF PHARMACY.

NOVEMBER PHARMACEUTICAL MEETING.

The regular pharmaceutical meeting of the Philadelphia College of Pharmacy was held on Tuesday, November 16, at 3 o'clock. Dr. Geo. D. Rosengarten presided during a portion of the time, but, not being able to remain until the close of the meeting, Mr. George M. Beringer was called to the chair. The papers presented were both interesting and timely, and this, taken in connection with the statements and opinions brought out in the general discussion, will probably make this meeting of far-reaching importance and one which will have more or less influence on the future of pharmacopœial revision in this country.

M. I. Wilbert, Ph.M., of Washington, D.C., who was the first speaker of the afternoon, read a paper on "Problems for the Pharmacopœial Convention of 1910" (see p. 565), and presented the following slightly amended resolution, which was laid on the table for further consideration and discussion at the next meeting:

WHEREAS, The conservation of the public health is a matter of great importance, and

WHEREAS, The Pharmacopœia of the United States is a valuable adjunct for this purpose, and

WHEREAS, The development of the Pharmacopœia of the United States along purely scientific lines is necessary adequately to reflect the progress and practice of American medicine; now, therefore, be it

Resolved, That it is the sense of the members here present that the admissions of articles to the U.S.P. IX be referred to a special committee of physicians representing clinicians, teachers, and laboratory workers; and be it further

Resolved, That the Committee of Revision be requested to give prompt publicity to its conclusions so as to permit of a full and free general discussion before the final adoption of the text for the Pharmacopœia.

The discussion on the paper and resolution was opened by Prof. Joseph P. Remington, Chairman of the U.S.P. Revision Committee. Professor Remington said that the question of greater publicity in connection with pharmacopœial revision had been discussed before and answered several times. He maintained that the charge of secrecy in revision work was unwarranted and the demand for greater publicity questionable, and that the records connected with the work of revision were open to every rightly constituted organization. He claimed that there were two objections to publishing the matter

to be included in the Pharmacopœia in advance in the pharmaceutical journals. The first of these was that no copyright could be obtained, and a fund would have to be provided in some other way for carrying on the work of revision. The second was the delay which would be caused by submitting the matter to all those interested and to the various learned bodies for criticism. He stated that the main reason why this Revision had been so generally criticized was the passage of the Food and Drug Law, and said that while he had no objection to criticisms of fact or error he did not favor the passage of resolutions which directed the Committee of Revision, claiming that this authority lay with the Pharmacopœial Convention.

Prof. Henry Kraemer, referring to the statement in Mr. Wilbert's paper that the death of Dr. Charles Rice a year after the convention meeting in 1900, followed by the reorganization of the Committee of Revision, was the probable cause of the delay in the publication of the present edition, said that while he had no desire to go over the past and was looking to the future, he thought it was due Dr. Rice to state that at the time of his death in May, 1901, the work of revision was well in hand. He said that Dr. Rice appointed him Chairman of the Subcommittee on Botany and Pharmacognosy shortly after the meeting of the convention and a little later called him to New York to go over the general features of the work before the subcommittee, and gave him a copy of the Ph. Germ. IV in order that he might have in mind what was being done by foreign pharmacopœias. Professor Kraemer stated that the first preliminary report of the Subcommittee on Botany and Pharmacognosy, including the definitions and descriptions of the seeds, roots, rhizomes, woods, and barks, was sent to the members of the Revision Committee on August 12, 1901, and that a second preliminary report treating the leaves, flowers, fruits, and herbs was submitted to them on September 13, 1901. In this connection Professor Kraemer said that there was a number of features pertaining to the vegetable drugs of the Pharmacopœia of which he did not approve, and he felt that greater publicity was imperative in that it would afford protection to the interests concerned and to the members of the Revision Committee as well. He said that publicity in the work is what every one connected with pharmacopœial revision should seek, and that every discussion pointed to the necessity of fixing responsibility for delays and for mistakes and of deter-

mining also where good judgment was exercised and faithful work performed.

Professor Remington replied that he yielded to no one in his esteem for Dr. Rice, but nevertheless the system used in carrying on the work of revising the 1890 Pharmacopœia and followed in preparing the 8th Edition was devised by him. He said that the system was cumbersome and led to delay in the work; that the work was carried on by correspondence, and that delays were caused by the members not sending in their votes; that the work was a labor of love and the members being busy men there was considerable difficulty in expediting the work. He also pointed out that another plan devised by Dr. Rice was that of having all the members of the Committee of Revision vote on all questions. Professor Remington therefore felt that the members of the Committee of Revision should not be held accountable for the delay in publication, as this was due to the system followed. He said that before another Revision is begun another plan must be adopted and that he intended to submit a plan of revision at the coming meeting of the convention.

Prof. Herman J. Lohmann, of the department of pharmacy of the University of the State of New Jersey, said that he desired to say a word commending the work of Professor Remington as Chairman of the Revision Committee. He agreed with him in the quotation that the U.S.P. VIII is the aristocrat of pharmacopœias, and contended that no sober work could be done in the glare of publicity. He said that the present Pharmacopœia had been attacked most severely by those having ulterior motives. He called attention to the fact that the description of resin of podophyllum now given in the Pharmacopœia more nearly conforms to the product on the market than that in the 1890 Edition, and said that very little of the product available conformed to the description then given.

Mr. Wilbert said that he believed there was only one point on which he and the Chairman of the Revision Committee differed, namely, that in regard to publicity. He held that people in this country are as honest as they are abroad and that therefore if other pharmacopœias are given greater publicity before final publication it would be equally practical to follow a similar plan here. He said that if the questions pertaining to the plan and scope of the Pharmacopœia were not discussed in advance of the convention

meeting it could not be hoped that the best results would be attained and that the member most gifted as an orator would be able to exercise the most influence over a large number of uninformed delegates. As an illustration of the desirability of preliminary publication of reports of subcommittees, he pointed out that the figures placed on the board relating to the report of the Subcommittee on Botany and Pharmacognosy were as new to him as to the majority of persons present. He felt that the publication of such a report at the time would no doubt have been an incentive for work along this particular line by others. Mr. Wilbert stated that he did not hold the Chairman of the Revision Committee responsible for the work of the committee, and that after all was said and done a good Pharmacopœia was all that was wanted.

Professor Kraemer said that the difficulty connected with the publication of the final reports of the subcommittees in the pharmaceutical journals could be obviated by having the matter copyrighted in advance.

Mr. Otto Raubenheimer, of Brooklyn, read an interesting paper on the "History of Maceration and Percolation."

In opening the discussion on this paper Mr. Beringer stated that the subject of maceration had been brought to the attention of the American Pharmaceutical Association by President Oldberg and the method recommended as having advantages over that of percolation.

Mr. E. H. Gane, of New York, in commenting on the paper said that Mr. Raubenheimer had covered the subject quite well. He said that the universal adoption of the method of percolation showed its superiority, and that it is also cheaper when applied on a large scale.

Mr. Beringer said that the chapter on "Percolation" in the present Pharmacopœia is an improvement over that in the previous edition, and that the process is in reality a maceration-percolation process. He stated that maceration is directed in the preparation of twenty of the official tinctures which are mostly resinous, the tincture of arnica being an exception.

Prof. I. V. S. Stanislaus was of the opinion that where the drug contains less than 50 per cent. of extractive percolation should be used, but in the case of larger percentages of extractive digestion is to be preferred.

Mr. Wilbert said that while the Brussels Conference adopted a resolution to make all tinctures of potent drugs by means of per-

colation, the Danish Pharmacopœia appears to have been the only one which has so far elaborated on the idea and includes a practical method for the percolation of opium, and that while several other pharmacopœias direct that tincture of opium be made by percolation they do not give directions for the process. Mr. Wilbert also expressed himself as being pleased that Mr. Raubenheimer called attention to the fact that the members of the Philadelphia College of Pharmacy were instrumental in introducing and elaborating the process of extracting vegetable drugs by means of percolation.

A number of communications bearing on the relative value of maceration and percolation were received, and these will be published together.

Prof. Charles H. LaWall presented "Some Suggested Standards and Changes for the U. S. Pharmacopœia," which will appear in a subsequent number of this JOURNAL.

Mr. F. M. Apple said, relative to a tentative suggestion by Professor LaWall that the strength of essence of peppermint be reduced to 5 per cent., that in general he favored as few changes as possible in the strength of pharmacopœial preparations, and that as the essence of peppermint is used by physicians the suggestion for a reduction in its strength should come from them rather than from the manufacturers of flavoring extracts.

A paper treating of "Spigelia, Belladonnæ Folia, Prunus Virginiana and Frangula, and Some of Their Adulterants" was received from John Moser, Jr., P.D., a recent graduate of the College.

Mr. Gane presented specimens of the following which recently appeared on the market: A root from Dutch Guiana called "Nekkoe" or "Narkoe Root" used in the treatment of dysentery and intestinal troubles, and sent to New York with the object of having its properties further studied; seeds of *Peganum Harmala*, an Indian plant; and vegetable "shells" imported probably to replace walnut shells, olive pits, etc., owing to the ease with which the latter can now be detected.

Attention was also directed to a specimen of aggregated crystals of selenite (hydrous calcium sulphate) obtained in St. Mary's Co., Md., and presented by President Howard B. French.

A vote of thanks was tendered the authors of the papers and the donors of the specimens.

FLORENCE YAPLE,
Secretary *pro tem.*

NOTES AND NEWS.

MR. MAHLON N. KLINE, First Vice-president and Chairman of the Board of Trustees of the Philadelphia College of Pharmacy, died suddenly of heart disease Saturday evening, November 27, in his 64th year. Mr. Kline was president of the wholesale drug firm of Smith, Kline and French Co., and a prominent member of the National Wholesale Druggists' Association and other pharmaceutical organizations. He was actively identified with civic, philanthropic, and religious work, and was a reformer in municipal politics. Mr. Kline's passing away will be a national loss to pharmacy. A sketch of his life and work will appear in a later issue of this JOURNAL.

AMERICAN PHARMACEUTICAL ASSOCIATION, SEARBY LETTERS.—Professor Edward Kremers, Historian of the Historical Section, has sent out the following letter:

While the principal duty of the Chairman and Secretary of the Historical Section is to provide a program for the sessions of this section, the duties of the Historian continue from one annual meeting to another. Possibly there are no more important historical documents that we can collect at the present time than letters written by leaders in American pharmacy. Thus special endeavors have been made to collect the correspondence of such men as Rice, Maisch, Ebert, and others. All material of this sort should be sent to the Historian. If the letters are confidential they can be sealed and marked with the date when they are to be released.

Recently the pharmaceutical press has announced the untimely death of Professor Searby. Possibly no pharmacist on the Pacific Coast has been more conspicuous than he. His correspondence on numerous subjects must have been extensive. It ought to be possible to fill an entire scrap volume with letters from our Ex-President before the next annual meeting of the A. Ph. A.

THE AMERICAN MATERIA MEDICA.—The third of the series of special lectures of the Philadelphia College of Pharmacy was delivered on Thursday, November 4, at 3.30 P.M., in the college museum by Prof. John Uri Lloyd, of Cincinnati, who spoke "Concerning the American Materia Medica." The lecture will be published in full in a subsequent number of this JOURNAL. Prof. Joseph P. Remington presided, and in introducing Professor Lloyd characterized him as a hard worker who writes books for recreation and one who, while he makes his home in Cincinnati, is yet a citizen of the world. Among the auditors on this occasion was Dr. H. W. Wiley, Chief of the Bureau of Chemistry, Washington, D. C.

INDEX

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AUTHORS.

[1] Compiled by Florence Yaple.

SUBJECTS.

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